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ABSTRACT

The Educational Quality Indicators (EQI) initiative, a collaboration between Alberta Education and 12 school jurisdictions in the province, is described, and its implications are discussed. The EQIs developed are designed to provide information to assist practitioners in assessing the quality of educational programs and the delivery system by focusing on student outcomes. The fundamental principle of the EQI initiative is that no single indicator can fully describe the complexity of education. Many indicators, qualitative and quantitative, will be developed, guided by a four-dimensional model consisting of: partners (schooling, family, and society); conditions (context, inputs, and processes); student outcomes (cognitive, affective, and behavioral); and time (grades 3, 6, 9, and 12). The three criteria for a successful indicator are: (1) the interpretive framework; (2) student outcomes; and (3) points of reference. The modus operandi of the initiative is to sponsor 10 concurrent collaborative action research projects. The implications of the EQI initiative for student learning, system support, and shared responsibility are discussed. Two figures and one table complement the text. (SLD)

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# Educational Quality Indicators:

## Developing Indicator Systems in Alberta

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# Educational Quality Indicators: Developing Indicator Systems in Alberta

The Educational Quality Indicators (EQI) initiative is a collaboration between Alberta Education and twelve school jurisdictions throughout the province. EQI embodies the ideals of local autonomy and provincial responsibility for the education of Alberta youth from grades 1 to 12 inclusive. The purpose of the initiative is to develop indicator systems which measure the quality of education for purposes of improved planning, policy and decision making. Educational indicators are intended to describe education in a way that permits meaningful interpretation to take place leading to educational improvement and accountability. This collaborative approach provides an opportunity to address major educational questions, engage in appropriate methods of inquiry and use collective insight to interpret the findings. This paper provides an introduction to educational indicators, a description of the EQI initiative and its components, and a discussion of its implications.

## Introduction

The release of *A Nation at Risk* (1983) and four other American reports[1] on education had a profound influence on education. The evident dearth of information about the quality of education led organizations and governments to attempt to "fill in the blanks" in the gaps of information about schools and schooling (Selden, 1988). The perceived shortcomings in education and international competition in all sectors served as a catalyst for the current accountability and reform movements in Canada and the United States, and indeed around the world. Accountability has increased the monitoring and evaluation of schools and systems. Many organizations are developing or implementing what have become known as educational indicator systems. Indicators can paint a broad picture of the conditions of education and stimulate thinking about potentially effective policies (Shavelson, 1988, p. 6).

Provincial(state) and federal governments currently collect some information about schooling. This information is usually reported in statistical form but can also be portrayed as indicators. Federal governments take a census every five years. Provincial(state) governments collect information annually. In the United States, all states and the District of Columbia collect performance data about schooling. According to the Office of Educational Research and Improvement (1988), 46 states have accountability systems of which 35 are state systems, two are local, and nine are a mixture of both state and local systems. Twenty-three states have

comprehensive indicator systems (pp. 28-29). At the national level, the National Assessment of Educational Progress (NAEP) provides periodic assessment of achievement in reading, mathematics and science of random samples of 9, 13 and 17-year-old students. In Canada, the provinces report information to the public through statistical and/or annual reports. Québec released its fourth edition of educational indicators for elementary and secondary schools in 1989. There is no Canadian Department of Education because education is a provincial responsibility; therefore general educational information is only released every five years through the census. The Council of Ministers of Education, Canada (CMEC) is the umbrella association for addressing questions of national importance in education. In September 1988, CMEC approved a three-phase plan for the development of national indicators. This School Achievement Indicators Project will provide a Canadian information base that will enable provincial ministries and departments to assess the performance of their school programs in comparison with Canada-wide standards and the performance of other provinces and territories (CMEC, 1988).

*An International Phenomenon*

The educational indicator movement is an international phenomenon. Canada and the United States are participating in three international indicator and assessment projects. The International Assessment of Educational Progress (IAEP), the Organization for Economic Cooperation and Development (OECD), and the International Association for the Evaluation of Educational Achievement (IEA) all undertake international comparisons of educational systems. Each of these projects is briefly described.

In February 1988, the IAEP administered an abbreviated version of the 1986 NAEP mathematics and science assessment for 13 year olds to students in five countries – Ireland, Korea, Spain, the United Kingdom and the United States – and four Canadian provinces – British Columbia, Ontario, Quebec and New Brunswick (Lapointe, Mead and Phillips, 1988). Because education is a provincial responsibility in Canada, each province is treated as a separate population. Twenty countries and nine provinces intend to participate in the 1991 IAEP for mathematics and science.

OECD's Centre for Educational Research and Innovation (CERI) launched an 18-month project to develop a set of indicators for policy and decision making. The exploratory phase concluded in December 1989. The project includes five networks, each of which is the responsibility of a particular country (Walberg *et al*, 1989). These are: I. Enrolment, educational career paths and leavers at different stages (Australia); II. Student Outcomes (United States); III. Ecology of schools and educational systems (France); IV. Costs and resources of educational systems (Austria); V. Attitudes and expectations of the actors, clienteles and partners in education (Netherlands). Canada is participating in networks I and II.

Canada and the United States also participated in the second IEA science and mathematics studies. These were cross-sectional studies of achievement which included accompanying

contextual information for interpreting results. The first IEA science study was conducted in 1970 and involved 19 countries. It was repeated in the mid-1980s with 24 countries or systems of education participating. Ten countries took part in both science studies (IEA, 1988). Students were tested at three levels: 10 years old (typically grade 4 or 5); 14 years old (typically grade 8 or 9) and the final year of secondary school (typically grade 12). The preliminary results show differences between and within countries. The second mathematics study took place during 1981/82 and focused on two populations: grades 8 and 12/13 students. It provided both a method and technology for gathering information on classroom instruction and student learning (Wahlstrom, Raphael and McLean, 1983).

*The Alberta Context*

Alberta is the fourth largest province in Canada and covers an area of 255,285 square miles. Its population of 2,429,200 represents just over 9% of Canadians. Almost 80% of Albertans live in urban areas. The Progressive Conservative Party currently holds 59 of the 83 seats in the Legislature. Alberta's economy is based primarily on the petrochemical industry, agriculture and tourism (Alberta Bureau of Statistics, 1989).

In 1984, the Government of Alberta introduced a number of initiatives to improve education in the province. These initiatives included the School Act Review, the Management and Finance Plan, the Review of Secondary School Programs, and the introduction of five evaluation policies (student, teacher, program, school and school system). The current management approach attempts to balance the inputs, processes and outcomes of the educational enterprise.

Alberta Education is responsible for the education of children from Early Childhood Services (kindergarten) to grade 12. The *School Act* (proclaimed December 31, 1988) focuses on the student because the fundamental purpose of education is to ensure that students learn. The School Act is based on five principles: access to quality education, equity, flexibility, responsiveness and accountability (Alberta Education, 1987, p. 4). The *goals of schooling* set the framework for the programs and activities that are planned, taught and evaluated; the six goals are considered of equal importance and relate, over the 12 years of formal study, to instructing students in communication, subjects, generic skills, well-being, citizenship and the world of work. Alberta Education provides *direction* and *support* to school jurisdictions by establishing the managerial and financial framework and by setting instructional policies, programs and evaluation strategies[2].

The responsibility for the delivery of instruction to children is delegated by the Minister of Education to school jurisdictions which are operated and managed by an elected Board of Trustees or County Council. Each Board hires a Superintendent of Schools who is the Chief Executive Officer of the Board. The School Act defines the roles and responsibilities of

students, schools and their staff, and school boards. School jurisdictions are required to file an Audited Financial Statement and an Annual Education Report with Alberta Education by November 30th of each year.

A summary of the major statistics for the 1988/89 school year indicates that 430,725 students were enrolled in grades 1 to 12 in 1,524 public and separate schools operated by 143 active school jurisdictions. The 27,232 certificated staff were on average: 39 years old, completed 4.6 years of university training, and had 13 years of teaching experience. Albertans invested $2.13 billion in the education of their school-aged children; the provincial government provided 60.5% and municipalities raised 34% of the required revenue; the remaining 5.5% was generated through other means. The average per pupil expenditure was $4,773 (Alberta Education, 1989).

## The EQI Initiative

Alberta Education is collaborating with twelve school jurisdictions to develop indicator systems to measure the success of the educational enterprise in the province. The indicators will provide information to assist in assessing the quality of educational programs and the delivery system by focusing on student outcomes (Alberta Education, 1988). The proposed system of measuring success has taken into consideration and reflects government policy and the goals of schooling. It addresses two essential questions: (1) Are students learning to their potential? (2) Is the educational system supporting student learning efficiently and effectively?

The Educational Quality Indicators (EQI) initiative will focus on developing indicator systems, establishing procedures, and reporting and disseminating the information to educational constituencies in Alberta. Figure 1 presents the expected outcomes for these three components. They are predicated on the conceptual framework which was developed for the EQI initiative.

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Insert Figure 1 about here.

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*Conceptual Framework*

The conceptual framework for the Educational Quality Indicators initiative guides the direction of the ten collaborative action research projects and the discussion of results-based education within Alberta Education. Educational indicators provide information about a system's current functioning, suggest whether progress is being made and warn of any potential problems (Oakes, 1986, p. 1). While indicators cannot describe a system completely, they do provide a picture of existing conditions which can inform planning, policy and decision making.

An educational indicator system should provide:

- information that is feasible to gather, valid and useful for policy decisions;
- logical clusters of indicators to increase the system's interpretative power;
- points of reference such as a previous value, the value of a comparison group or some socially determined standard;
- measures of the ubiquitous features of schooling that are: enduring, easily understood, feasibly measured and generally accepted as valid and reliable statistics;
- a reporting system that is accurate and timely (Oakes, 1986; Selden, 1988).

It is important to use multiple indicators to describe the complexity of education. Trends over time using many indicators will provide a good picture of performance. Information available through documentation, student assessment, surveys and observation, can describe the effectiveness and efficiency of the operation. As there are multiple users of information, it is also necessary to determine what type of information the different audiences require and to tailor information reports to their specific needs (Bock and Mislevy, 1988).

The fundamental principle of the EQI initiative is that no single indicator, or even group of indicators, can fully describe the complexity of education. The proposed system will include many indicators, measured by both quantitative and qualitative methods, for selected dimensions. EQI does not intend to propose an educational index which can be used as a single yardstick for measuring progress. It intends to include many indicators organized in logical clusters, measured in different ways, using information from multiple sources to describe education in such a fashion that meaningful interpretation and judgements can be made. The indicator system intends to *enhance* information about education for improved *action* in planning, policy and decision making.

A four-dimensional model of education was developed to guide the direction of this initiative. It consists of partners (schooling, family and society), conditions (context, inputs and processes), student outcomes (cognitive, affective and behavioral) and time (grades 3, 6, 9 and 12) (McEwen and Zatko, 1989, pp. 8-10). It draws on the work of Carroll (1963), Hymel (1988), Walberg (1984), Oakes (1986) and Shavelson *et al* (1987). The EQI model extends the work of the above by consolidating the joint responsibility of the partners who contribute specific conditions to developing student learning over time.

The model provides a way of describing the interrelationships among the dimensions. This description of the educational system and student achievement is not meant to predict future behavior, but rather to help in providing some understanding of the educational phenomena that occurred at a particular point in time which can subsequently be acted upon to improve the situation. It is intended to permit multiple levels of analysis – province, community, school, classroom and individual students – so that interpretations can be drawn and improvement targets proposed (Cziko, 1989, p. 23).

Education is a complex social enterprise. Focusing on schooling alone, without regard for the other influences which shape its direction, will likely not result in significant change because of the vested interest of the other contributors. This model incorporates the responsibilities of the other major partners and suggests conditions which may affect student outcomes over time. For educational constituencies to determine whether or not students are making appropriate progress, it is necessary to examine results over time to determine what changes should and could be effected.

The EQI initiative set three criteria for a successful indicator system: an interpretative framework to describe variation among students and schools; student outcomes related to the educational enterprise; and points of reference for comparing results (Alberta Education, 1988).

- The *interpretative framework* consists of the partners (schooling, family and society) and conditions (context, inputs and processes). Together the partners and their respective conditions provide a framework for helping to understand the student outcomes which schools, the family and society strive to produce through adjusting the inputs and processes; the context is not as readily changeable. School jurisdictions and government collect a lot of information on context and inputs; some also collect information on instructional processes. School jurisdictions are interested in results for students in other jurisdictions of comparable size, location and economic base.
- *Student outcomes* should include a broad range of the behaviors desired by schools in the cognitive, affective, physical and social domains; the outcomes selected for measurement should relate to the goals and priorities of the local school jurisdiction.
- *Points of reference* include time, groups and targets. Assessment of selected indicators can occur either on an annual or a periodic basis; for example, Alberta achievement tests and diploma examinations are administered annually to students in grades 3, 6, 9 and 12, whereas assessments such as those conducted by the IEA and IAEP occur periodically in selected subject areas. Groups for comparing results can include local, provincial, national and international counterparts. Targets include benchmarks and standards. Benchmarks describe the existing level of conditions and outcomes whereas standards define an optimal or desired level; targets specify a feasible level of improvement within a predetermined period of time. A target sets an improvement increment over what exists (the benchmark) in an attempt to reach what is desired (the standard).

Table 1 presents examples of cognitive, affective and behavioral outcomes with indicators, measures and points of reference for grade 6 students.

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Insert Table 1 about here.

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*Collaboration*

Alberta Education is collaborating with twelve school jurisdictions[3] that are already measuring educational quality. The EQI initiative is sponsoring ten concurrent action research projects. One or more school jurisdiction(s) within the zone of each Regional Office of Education has been identified and invited to participate. Each school jurisdiction prepared a proposal based on the Terms of Reference and submitted it for approval. The Planning and Policy Secretariat is providing funds to assist these jurisdictions to improve their assessment procedures and to share their results with others in the province. This collegial model demonstrates Alberta Education's leadership and cooperation with constituents in improving education in the province. Figure 2 presents a map of the province of Alberta which identifies the location of each of these school jurisdictions.

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The participants represent a diversity of school jurisdictions in the province. Spirit River School Division is the smallest in terms of enrolment (N= 1,153 students in 9 schools) but covers the second largest geographic area (3,500 square miles) of the participating schooling jurisdictions. Rocky Mountain School Division covers an area of 6,640 square miles. The Calgary Public School District has the largest enrolment with 82,082 students in 207 schools located in Calgary, a city which has a population of 620,692. Because the jurisdictions are all different, they have different needs, goals and priorities; these differences are reflected in the types of indicators they wish to develop.

The *modus operandi* of the initiative is to sponsor ten concurrent collaborative action research projects. Researchers formulate problems on the basis of theory or disciplines, whereas policy makers and practitioners are action-driven. Where researchers use information to confirm or disconfirm theory, policy makers and practitioners use information to guide actions with direct and indirect consequences for students and the public (Shavelson, 1988, pp. 10-11). Action research is enjoying a resurgence in popularity as the need for decision making based on sound research and practical realities becomes ever stronger. Kemmis (1983) defined this type of research as "a systematic process of collaborative review and improvement of educational or social policies, programs and practices". It is participatory, collaborative, practice-based and action-oriented, concretely critical, self-reflective and emancipatory (p. 147). Longstreet (1982) identified five criteria for this type of research: it is characterized by ongoing tentativeness, recursion, empirical evidence and intersubjectivity, connotation, and collegial sharing. In research related to the delivery of human services, it is important to understand that problems

themselves are in constant flux; they shift in their nature and meaning as the context and environments shift. Ongoing revision of the parameters of a problem as well as the generalizations forthcoming is a necessary characteristic of action research (p. 147).

Through this collaborative endeavor between the government and school jurisdictions, the proposed local and provincial indicator systems will result in a balance between what is desirable and possible. The ownership and commitment that will result from leaders developing local indicator systems, which reflect the values of their respective communities, will have positive spin-off effects on the larger educational context in Alberta. The benefits of this three-year collaboration include the discussion among participants on the emerging set of indicators, the examination of issues, and the communication of results to diverse client groups. The information generated from the ten projects will assist Alberta Education to develop provincial indicators. The interpretation and recommended directions of the local indicator projects, together with other provincial initiatives, will provide a solid foundation for the implementation of an efficient and effective information system which measures the success of the educational enterprise in the province.

Alberta Education's role is to provide the means to assess the quality of its educational programs and delivery system by focusing on aggregated student outcomes. The province is concerned with achieving a provincial standard which is comparable to national and international counterparts. School jurisdictions participating in this initiative are concerned with comparing and interpreting the results for their own students in different schools as well as comparing their results to other jurisdictions of comparable size, location and economic base. The two perspectives will lead to the use of some common indicators for provincial purposes and others which are of particular interest to school jurisdictions.

Coordination of the EQI initiative resides in the Planning and Policy Secretariat. This branch reports directly to the Deputy Minister of Education who leads and directs all activities of the department within the policy direction established by the Minister of Education. A provincial coordinator is responsible for the initiative. Two committees, chaired by the provincial coordinator, provide assistance to EQI. The Working Group consists of the liaison staff from each of the five Regional Offices of Education (located in Grande Prairie, Edmonton, Red Deer, Calgary and Lethbridge). This committee is responsible for monitoring the projects; it meets on a regular basis to discuss progress, identify issues and strategies, and to plan the provincial meetings. The second committee is the interdivisional Advisory Group which consists of representatives from branches within the Student Programs & Evaluation and Finance & Administration Divisions of Alberta Education; it meets on a periodic basis and provides input and feedback.

*Local Development*

Each project is completely autonomous and the responsibility of a local coordinator and project team. This coordinator reports to the superintendent for the school jurisdiction. The coordinator is responsible for the developmental work and the management of the tasks identified in the contract between the school jurisdiction and the department. The contract requires annual progress reports as well as a final project report, which will become public, upon completion of the project in 1992. Each project is guided by a local Steering Committee consisting of the local coordinator and other staff from the participating school jurisdiction, liaison staff from the Regional Office of Education and the provincial coordinator. The Steering Committee's responsibilities include consultation and evaluation of the terms of the contract.

Each participating school jurisdiction is responsible for its own project because each represents a community which has particular values it wishes to impart to its students through its goals, priorities and expectations. It is important that each project reflects these aspirations by involving its public – students, teachers, administrators, trustees, parents, others – in discussions on which indicators to include and why. Without input from the larger community, the indicators may not provide a representative picture of the expected outcomes of the educational system.

Each participating school jurisdiction will develop and implement a local indicator system which includes the three components identified in Figure 1: (1) a set of indicators (including an interpretative framework, student outcomes and points of reference); (2) methods (to collect, analyze and interpret the information); and (3) a reporting and dissemination strategy (to inform diverse audiences of the results). The selected indicators will represent each jurisdiction's own goals and priorities and reflect the local community's expectations. These will vary among the participating school jurisdictions. Every project has three phases, each of approximately one year's duration. The first year, 1989/90, is a developmental one and the subsequent two years will result in field testing the prototype sets of indicators and methodological procedures and then refining them. Each project will identify indicators that are unique to its particular situation. School jurisdictions, if they are to make sense of the outcomes of their educational enterprise, need to interpret the results in terms of their local circumstances. By developing a preliminary set of indicators, trying it out in their own jurisdiction and refining it on the basis of the results, jurisdictions take the opportunity to use indicators which are flexible, responsive to local needs, have community support, and can provide them with the type of information they need for setting policies, practices and procedures.

The major focus of each project varies depending on areas the school jurisdiction wishes to explore. Since all of the participating school jurisdictions are already collecting and reporting information, the EQI funding and consultation provide them with an opportunity to enhance their existing information bases. Projects range from focusing on developing a system review

(Lacombe/Rocky Mountain), to measuring social competence (Fort McMurray Public), to communication, creativity and problem solving (Calgary). Each will contribute to the body knowledge which the EQI initiative is trying to promote – the enhancement of information improved planning, policy and decision making.

*Provincial Support*

Alberta Education is supporting this initiative by providing resources (funds and consultati information and coordination. A quarterly newsletter, the *Collaborator*, was introduced to as a communications mechanism. The first issue was released in September 1989 at the fir provincial meeting. It provided an overview of EQI and each of the ten concurrent collabo action research projects. Two subsequent issues have been published. EQI participants h contributed material on the progress of their projects.

Three technical documents have been developed to support this initiative (Alberta Education, 1990). The first, an annotated bibliography, was distributed in July 1989. It subsequently revised, expanded and reorganized and released in January 1990. This secon edition contains approximately 230 annotations organized into 14 themes under three major headings: indicator systems, interpretative framework (context, inputs, processes) and outcomes. It has been distributed to all school jurisdictions in Alberta to promote the discu of results-based education. The second technical document is a report on methodological considerations. It consists of a rationale for a balanced approach to quantitative and qualitat analysis, followed by considerations in employing these two methodologies. The draft w submitted to selected measurement specialists for their review and comment. Their suggest were incorporated into the final version. The third is an inventory of assessment instrume that may be appropriate for EQI. It contains a summary of technical criteria for analyzing instruments, a description of these technical criteria and critiques of more than 70 instrume The inventory identifies potential assessment instruments and screens them according to the psychometric properties and suitability for EQI. It provides project participants with a convenient pool of possible measures for the types of indicators which interest them. This inventory is currently being circulated for feedback and identification of additional instrume

The key participants – Alberta Education staff, project coordinators and superintende will meet semiannually to share information, discuss and interpret findings, and identify iss and strategies. The first meeting of this Provincial Committee was held in September 1989 Edmonton. The second meeting will take place in June 1990. This committee will continu meet until the end of the initiative in 1992 when each jurisdiction will be responsible for the implementation of its local indicator system.

## Discussion

The EQI initiative has a number of implications for the policy and practice of education. The implications for student learning, system support and shared responsibility are discussed.

Departments of Education, school jurisdictions and schools all exist to develop student learning. Children spend approximately a thousand hours annually for a total of 12,000 hours[4] in school during their elementary and secondary school careers. This represents about a fifth of their waking time; it is a substantial investment by society in its future well-being. All of the stakeholders – parents, the educational community (teachers, administrators, government, academics), the public – have a vested interest in how that time is spent to ensure that students get maximum benefit from these formative years. It is incumbent upon educators to ensure that instructional time is well spent since it represents a crucial opportunity to impart desired concepts and attitudes, and to develop appropriate skills.

Schools are among the best institutions through which our culture and values can be transmitted. They need to ensure that students learn the essential (core) concepts, skills and attitudes required so that our heritage of learning is preserved and so that we do not repeat past mistakes or waste valuable time. Personal needs and aspirations must also be accommodated if we are to remain a free and democratic society. People are unique yet share common values through social institutions. In order to provide opportunities for individuals to pursue their talents and interests, it is necessary to cultivate a strong program of complementary courses of choice. What is essential, the core curriculum, should be learned by everyone. What is of personal interest should be available to those with the inclination to commit the necessary time and energy to it.

One of the ways to gauge whether progress has been made is to assess students, be it through paper-and-pencil measures or through some alternative form. Assessment, in whatever form, should be judicious so that it serves a purpose. Teachers assess their students' work regularly for diagnostic, formative and summative purposes. An indicator system should not become a replacement for teacher assessment, but rather another means to examine some of the broader, more enduring goals of schooling which do not relate exclusively to the curriculum, the content under instruction.

Many educational authorities assess cognitive outcomes through criterion-referenced or norm-referenced local/provincial(state) assessment programs. This is usually done at the exclusion of other important outcomes which are reflected in the goals of schooling. A major effect of testing is that it drives the curriculum; when English (or literacy) is tested, it signals its importance and a great deal of time is committed to its instruction to ensure that students succeed in this particular discipline. Subjects which are not tested are perceived to be of lesser importance and can fall victim to restraint.

Humans are complex social beings – they have a mind, a heart, and a body. Personal well-being occurs when there is balance among the different aspects; these correspond to various domains: cognitive (mind); affective (heart); physical (body); and social (relationships). If the purpose of education is to develop the whole child, then it seems appropriate to look at more than single dimensions. The EQI model includes four: cognitive, affective, physical and social.

Indicators which cover a wider range of desired outcomes – those that are related to the goals of schooling – can provide a more comprehensive picture of what actually exists. Most goal statements include student development in the cognitive, affective, physical, social and other domains. Yet little information about students' progress in developing these concepts, skills, attitudes and interests exists. If communities truly believe that it is important to develop the whole child, so that he/she will become a contributing member of the community/province (state)/country, they should look for ways to tell if the child is in fact developing the requisite knowledge, skills and attitudes.

Another aspect of schooling, which is important but often not measured, is individual growth over time. Schooling should develop the individual to his/her fullest potential by providing the experiences which will assist that development. It should strive to make the person an independent, self-sufficient human being capable of taking care of him/herself and making a contribution to society. Measurement should occur at meaningful intervals. If progress on the important factors is measured on a regular basis, it is possible to provide appropriate interventions for particular strengths and weaknesses.

In an ideal world, there would be no poverty, crime or discrimination; unfortunately we do not live in utopia. "Government of the people, by the people, for the people" (Lincoln, 1863) cannot or will not redress all the inequities which exist. Societies make choices through their election of governments and in their allocation of scarce resources. Education has received unprecedented attention and interest in the last few years. Educational issues are being debated and agendas for improvement advanced.

Support for schooling depends on the perceived value of its utility and effectiveness. Political, economic, social and cultural forces interact to shape the direction that publicly supported education takes. Indicator systems attempt to address some of these aspects of support as well as constraints on schooling. The educational community cannot be held solely responsible for the development of the next generation. The other major partners (the family and society) have a key role to play. They need to work together to ensure that the prevailing values permeate the schools. While the goals of a country are usually fairly consistent, especially in the Western world, (ie, Canada is a democracy embracing cultural pluralism), each province(state), municipality and community has unique variations. The closer to the school, the more direct the influence of the partners on its population. Each community has its own perception of goodness. The development of local indicator systems provides a community the opportunity to discuss its goals and priorities and to measure whether they are attained.

Educational indicators are not the new panacea for improving our schools. They can, however, provide a more balanced picture of the operation and outcomes of schooling, particularly if they focus on a broader range of desired outcomes. By focusing on student learning, and interpreting the findings in terms of educational conditions, better decisions may result from the enhanced information available about schooling. The next three years promise to be challenging ones as Alberta Education and the participating school jurisdictions come to a common understanding of the implications of an indicator system for monitoring the success of the educational enterprise.

## Notes

1. Task Force on Education for Economic Growth. *Action for Excellence*; Task Force on Federal Elementary and Secondary Educational Policy. *Making the Grade;* Ernest L. Boyer. *High School. A Report on Secondary Education in America;* National Science Foundation. *Educating Americans for the 21st Century.*

2. Alberta Education, through its policies, programs and funding, provides school jurisdictions with the support needed to provide effective instruction to students. The following set the direction for schooling in the province: *Managerial and Financial*: (1) School Act; (2) Department of Education Act; (3) Policy Manual; (4) School Foundation Program Fund; (5) Other Grants; (6) Grants Manual; (7) Management and Finance Plan; (8) Core Values. *Instructional:* (1) Programs of Study (elementary, junior, senior high); (2) School Handbooks (elementary, junior, senior high); (3) Policy on Articulation of Children's Learning; (4) Essential Concepts, Skills and Attitudes; (5) Secondary Education in Alberta Policy; (6) Senior High School Graduation Requirements; (7) Achievement Tests (grades 3, 6, 9); (8) Diploma Examinations (grade 12).

3. *Zone 1*: Grande Prairie School District No. 2357; Spirit River School Division No. 47; *Zones 2 and 3*: Fort McMurray School District No. 2833; Fort McMurray RCSSD No. 32; Edmonton Public School District No. 7; *Zone 4*: County of Lacombe No. 14 and Rocky Mountain School Division No. 15 (joint project); *Zone 5*: Calgary School District No. 19 and Calgary RCSSD No. 1 (joint project); *Zone 6*: Lethbridge School District No. 51; Lethbridge RCSSD No. 9; Brooks School District No. 2092.

4. There are 105,120 hours in twelve years. If children average about 40% of their time sleeping (10 hours/day), that leaves about 61,320 hours of which schooling takes up one fifth of the available time (12,000/61,320 = 19.6%). Adding an hour for lunch (190 days x 12 years = 2,280), the percentage of school time increases to 23.3%. If we add an average of an hour a night of homework over the 10 months of school for twelve years (the assumption is that younger children do not do homework, but older ones probably spend more than an hour a day), we arrive at a total of 16,560 hours; the amount of school-related time increases to 27% which is close to a third of students' waking hours.

## References


Alberta Bureau of Statistics. (1989). *Alberta Facts*. Edmonton: Government of Alberta.

Alberta Education. (1987). *Framework for a New School Act. Highlights*. Edmonton: Government of Alberta.

Alberta Education. (1988). *Educational Quality Indicators: Terms of Reference*. Edmonton: Planning and Policy Secretariat.

Alberta Education. (1989). *Facts and Figures*. Edmonton: Government of Alberta.

Alberta Education. (1990). *Educational Quality Indicators: Annotated Bibliography*. Edmonton: Planning and Policy Secretariat.

Alberta Education. (in press). *Educational Quality Indicators: Methodological Considerations*. Edmonton: Planning and Policy Secretariat.

Alberta Education. (1990). *Educational Quality Indicators: Inventory of Assessment Instruments*. Draft March 1990. Edmonton: Planning and Policy Secretariat.

Bock, R.D. and Mislevy, R.J. (1988). Comprehensive Educational Assessment for the States: The Duplex Design. *Educational Evaluation and Policy Analysis, 10(2)*, 89-105.

Boyer, Ernest L. (1983). *High School. A Report on Secondary Education in America*. New York: Carnegie Foundation for the Advancement of Teaching.

Carroll, John B. (1963). A Model of School Learning. *Teachers College Record, 64*, 723-733.

Cziko, G. A. (1989). Unpredictability and Indeterminism in Human Behavior: Arguments and Implications for Educational Research. *Educational Researcher, 18(3)*, 17-25.

Council of Ministers of Education, Canada. (1988). National Education Indicators Program Approved. *Liaison, 13(2)*, 4.

Hymel, Glenn M. (1988, March). *A Macromodel of Effective, Outcome-Based, Mastery Learning School Variables: An Extended View*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans.

International Association for the Evaluation of Educational Achievement. (1988). *Science Achievement in Seventeen Countries: A Preliminary Report*. Oxford: Pergamon Press.

Kemmis, Stephen (1983). Action Research. In D.S. Anderson and C. Blakers (Editors), *Youth, Transition and Social Research* (pp. 130-152). Canberra: Australian National Univesity Press.

Lapointe, A.E., Mead, N.A., and Phillips, G.W. (1989). *A World of Differences. An International Assessment of Mathematics and Science*. Princeton, NJ: Educational Testing Service.

Lincoln, Abraham. (1863). *The Gettysburg Address*. November 19, 1863.

Longstreet, Wilma S. (1982). Action Research: A Paradigm. *The Educational Forum, 46*, 135-158.

McEwen, Nelly and Zatko, Gary. (1989, June). *Educational Quality Indicators: Framework for Action.* Paper presented at the annual meeting of the Canadian Educational Researchers' Association, Quebec City.

National Commission on Excellence in Education. (1983). *A Nation at Risk: The Imperative for Educational Reform.* Washington, DC: US Government Printing Office.

National Science Board. (1983). *Educating Americans for the 21st Century.* Washington, DC: National Science Foundation.

Oakes, Jeannie (1986). *Educational Indicators: A Guide for Policymakers.* New Brunswick, NJ: Centre for Policy Research in Education, Rutgers University.

Office of Educational Research and Improvement. (1988). *Creating Responsible and Responsive Accountability Systems.* Washington, DC: US Department of Education.

Selden, Ramsay W. (1988). Missing Data: A Progress Report from the States. *Phi Delta Kappan, 69,* 492-494.

Shavelson, Richard J. (1988). Contributions of Educational Research to Policy and Practice: Constructing, Challenging, Changing Cognition. (The 1988 Presidential Address). *Educational Researcher, 17(7),* 4-11, 22.

Shavelson, R.J., McDonnell, L., Oakes, J., Carey, N. and Picus, L. (1987). *Indicator Systems for Monitoring Mathematics and Science Education.* Santa Monica, CA: The RAND Corporation.

Task Force on Education for Economic Development. (1983). *Action for Excellence.* Denver: Education Commission of the States.

Task Force on Federal Elementary and Secondary Education Policy. (1983). *Making the Grade.* New York: Twentieth Century Fund, Inc.

Walberg, Herbert J. (1984). Improving the Productivity of America's Schools. *Educational Leadership, 41(8),* 19-27.

Walberg, Herbert J. *et al.* (1989, March). *International Educational Indicators: Accomplishments and Projects.* Symposium at the annual meeting of the American Educational Research Association, San Francisco.

| Indicator Systems | Methods |
|---|---|
| **interpretative framework**<br>• context<br>• inputs<br>• processes<br><br>**student outcomes**<br>• cognitive<br>• affective<br>• behavioral<br><br>**points of reference**<br>• time<br>• groups<br>• targets | **data sources**<br>• available information<br>• identify needs<br>• develop measures<br><br>**collection procedures**<br>• student testing<br>• surveys<br>• documentation<br><br>**analytic procedures**<br>• quantitative<br>• qualitative |
| **Report and Dissemination** | |

*Figure 1: Expected Outcomes of the EQI Initiative*

## Table 1

### Examples of Cognitive, Affective and Behavioral Outcomes with Indicators, Measures and Points of Reference for Grade 6 Students

| Outcome | Indicator | Measure | Points of Reference: *Time* | *Groups* | *Targets* [1] |
|---|---|---|---|---|---|
| COGNITIVE | **achievement** | *Achievement Tests*: [2]<br>• English<br>• social studies<br>• mathematics<br>• science | annually | school<br>jurisdiction<br>province | by 1991, establish benchmark data and specify improvement targets |
| | | *Canadian Test of Basic Skills* [3]<br>or<br>*Can. Achievement Test* [3] | every 3 years | school<br>jurisdiction<br>province<br>country | Canadian norms provide benchmarks |
| AFFECTIVE | **self-esteem** | *Student's Perception of Ability Scale* [4] | annually | school<br>jurisdiction<br>province [6] | by 1991, establish benchmark data and improvement targets |
| | | *Children's Self Concept Scale* [5] | periodically | school<br>jurisdiction<br>province [6] | by 1993, establish benchmark data and specify improvement targets |
| BEHAVIORAL | **health** | *physiology* [8]<br>• BMI<br>• vital signs | annually | school<br>jurisdiction<br>province [6] | by 1991, establish benchmark data and improvement targets |
| | | *quality of life* [9]<br>• nutrition<br>• lifestyle<br>• hygiene | annually | school<br>jurisdiction<br>province [6] | |
| | | | periodically | country [7] | Canadian norms provide benchmarks |
| | **fitness** | *CAHPER Test* [10] | annually | school<br>jurisdiction<br>province [6] | by 1991, establish benchmark data and improvement targets |
| | | | periodically | country [7] | Canadian norms provide benchmarks |

The notes are on the next page.

## Notes to Table 1:

1 A *benchmark* describes the current level of performance; a *target* specifies a feasible level of improvement within a specified period of time; a *standard* specifies an optimal level.

2 These Alberta tests measure students' mastery of the content under instruction.

3 These tests provide a measure of students' performance compared to a normative group.

4 This measure was developed at the University of Alberta and has Canadian norms for grades 3 to 6 by gender.

5 This measure is appropriate for grades 3 to 12 inclusive and is normed for each grade by gender. It provides an external point of reference as it has been used extensively in the United States.

6 School systems could forward their locally-collected data to the province which would aggregate the results to provide a general assessment of self-esteem.

7 Sampling health and fitness on a periodic basis provides an indication of the general health of Alberta children compared to their Canadian counterparts. Some of this information for Canadians is available through the census.

8 While the Body Mass Index (weight/height $^2$) is not recommended for children, it can identify those who deviate significantly from standard weight/height tables which can be used to gauge general health. Blood pressure and resting pulse rate are examples of vital signs; they can be reliably measured by electronic devices which can be readily used with little training.

9 Paper-and-pencil inventories exist to provide an indication of how well people adhere to a healthy lifestyle by eating appropriate foods, getting enough rest, maintaining proper hygiene, etc.

10 This test has been normed separately for males and females from age 7 to adult. The Canadian Fitness Award is given for excellence in this test which is taken by 1.5 million participants annually.

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*Figure 2: Location of the EQI Projects in Alberta*